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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,104	11/14/2000	Masaki Sano	NEC 177	9234
27667	7590	02/27/2006	EXAMINER	
HAYES, SOLOWAY P.C. 3450 E. SUNRISE DRIVE, SUITE 140 TUCSON, AZ 85718			CHU, KIM KWOK	
			ART UNIT	PAPER NUMBER
			2653	
				DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/712,104	SANO, MASAKI	
	Examiner	Art Unit	
	Kim-Kwok CHU	2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on Election/Restriction filed on 11/26/2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 4-22 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1 and 2 is/are rejected.
- 7) Claim(s) 3 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 11/14/2000 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

Response to Remarks

1. Applicant's Remarks on election/restriction filed on November 26, 2005 has been fully considered.

- (a) Applicant elects Species A and claims 1-3; and
- (b) non-elected claims 4-22 are not examined.

Claim Objections

2. Claim 1 is objected to because of the following informalities:

- (a) in claim 1, line 7, the term "a phase comparator" should be changed to --the phase comparator-- so as to be consistent with the claimed phase comparator in line 2.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless --
(b) the invention was patented or described in a
printed publication in this or a foreign country or
in public use or on sale in this country, more than
one year prior to the date of application for
patent in the United States.*

4. Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as being anticipated by Nogawa (U.S. Patent 6,147,530).

Nogawa teaches a PLL circuit having all the elements and means as recited in claims 1 and 2. For example, Nogawa teaches the following:

- (a) as in claim 1, a phase comparator 1 detecting a phase difference (Fig. 8);
- (b) as in claim 1, a charge pump 7, 8, 10 converting the phase difference into a voltage (Fig. 8);
- (c) as in claim 1, a loop filter 3, 4, smoothing the voltage (Fig. 8);
- (d) as in claim 1, a voltage-controlled oscillator 5 receiving the smoothed voltage as a control voltage (Fig. 8);
- (e) as in claim 1, the phase comparator 1 comparing phase of an output signal from the voltage-controlled oscillator 5, or phase of an output signal obtained by frequency-dividing the

output of the voltage-controlled oscillator by a frequency divider 6 (Fig. 8);

(f) as in claim 1, an output signal from the voltage-controlled oscillator 5, or frequency-divided output signal of the frequency divider 6, is fed back and input to the phase comparator 1 to have its phase compared with that of an input signal (Fig. 8);

(g) as in claim 1, the voltage-controlled oscillator 5 has a non-inverting input terminal and an inverting input terminal (Fig. 8; inherent feature as in Applicant's prior art Fig. 11; each terminal is supplied with variable voltage VC);

(h) as in claim 1, the voltage-controlled oscillator 5 has a difference voltage VC between terminal voltages impressed upon respective ones of the non-inverting and inverting input terminals is input to the voltage-controlled oscillator as a control voltage so that the voltage-controlled oscillator 5 oscillate at a frequency in accordance with this control voltage (Fig. 8; different voltage VC is applied between terminals of the VCO 5);

(i) as in claim 2, the charge pump 7, 8, 10 controls (i) enlarging or (ii) reducing the difference voltage between both variable terminal voltages VC of non-inverting and inverting input terminals of the voltage-controlled oscillator 5 in accordance with an output from the phase comparator 1

representing the result of the phase comparison (Fig. 8; variable voltage VC is applied to both the variable terminals of the VCO 5); and

- (j) as in claim 2, the charge pump controls:
 - (i) enlarging the difference voltage by raising the terminal voltage of the non-inverting input terminal and lowering the terminal voltage of the inverting input terminal of the voltage controlled oscillator 5 in accordance with the output from the phase comparator 1 (Fig. 8; one terminal always has higher voltage than the other terminal); or
 - (ii) reducing the difference voltage by lowering the terminal voltage of the non-inverting input terminal and raising the terminal voltage of the inverting input terminal of the voltage-controlled oscillator in accordance with the output from the phase comparator 1 (Fig. 8; one terminal always has higher voltage than the other terminal).

Allowable Subject Matter

5. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claim 3, the prior art of record fails to teach or fairly suggest a PLL circuit having the following features:

- (a) first and second loop filters connected at output terminals to the non-inverting and inverting input terminals, respectively, of the voltage-controlled oscillator;
- (b) the charge pump performs the following control that in accordance with an output from the phase comparator representing the result of the phase comparison, a first capacitor a terminal voltage whereof provides an output terminal voltage of the first loop filter is charged to thereby raise the terminal voltage of the non-inverting input terminal of the voltage-controlled oscillator, and a second capacitor a terminal voltage whereof provides an output terminal voltage of the second loop filter is discharged to thereby lower the terminal voltage of the inverting input terminal of the voltage-controlled oscillator, whereby the difference voltage

is enlarged at the time of an operation for raising the oscillation frequency of the voltage-controlled oscillator; and

(c) the charge pump performs the following control that in accordance with the output from the phase comparator representing the result of the phase comparison, the first capacitor is discharged to thereby lower the terminal voltage of the non-inverting input terminal of the voltage-controlled oscillator, and the second capacitor is charged to thereby raise the terminal voltage of the inverting input terminal of the voltage-controlled oscillator, whereby the difference voltage is reduced at the time of an operation to lower the oscillation frequency of the voltage-controlled oscillator.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoshioka (6,154,097) is pertinent because Yoshioka teaches a PLL circuit.

8. Response to this action should be mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Or faxed to:

(571) 273-8300 (for formal communications intended for entry. Or:

(571) 273-7585 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Any inquiry of a general nature or relating to the status of this application should be directed USPTO Contact Center (703) 308-4357; Electronic Business Center (703) 305-3028.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

Kim-Kwok CHU
Examiner AU2653

ve 2/21/06
February 21, 2006
(571) 272-7585


TAN DINH
PRIMARY EXAMINER
2/21/06